UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,828	02/24/2004	Akira Yumoto	SON-1854/SOH/DIV	9682

23353 7590 06/13/2007

RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER	
LAO, LUN YI	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
06/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,828	YUMOTO, AKIRA	
	Examiner	Art Unit	
	LUN-YI LAO	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13, 18-31, 33-34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/24/2004 and 8/14/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-13,18-31,33,34,38-41,43-51,53,54, 58, 61, 63-81,88-119,126-148 and 155-165.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I(claims 1-13, 18-31, 33-34. 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-162) in the reply filed on March 16, 2007 is persuasive. Claims 1-13, 18-31, 33-34. 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 have been examined.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No.6,686,699.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line, a signal line to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the Patent No. 6,686,699 as below:

10/784,828(claim 1)	6,686,699 (claim 1)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	pixel circuits each having an electrooptic device that changes brightness thereof according to a current flowing therein;
a signal line to which a signal current having a current level in accordance with information is supplied,	a data line driving circuit for supplying a writing current of a magnitude corresponding to brightness to each of said pixel circuits via a data line and thereby writing brightness data
a receiving part for fetching the signal current from the signal line when the control line is selected,	a current driving circuit provided for each data line for feeding the data line with a driving current
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same,	a converting unit supplied with information of a value of the driving current to be fed in a form of a current, for converting the supplied current into

	a form of a voltage; a retaining unit for retaining the voltage obtained by the conversion by said converting unit
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a driving unit for converting the voltage retained by said retaining unit into a current, and feeding the data line with the current as said driving current.

4. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,859,193. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line, a signal line to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the Patent No. 6,859,193 as below:

10/784,828(claim 1)	6,859,193(claim 1)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	A current drive circuit for supplying a drive current to a driven object, including: a control line

a signal line to which a signal current having a current level in accordance with information is supplied,	a signal line to which a signal current having a current level in accordance with information is supplied
a receiving part for fetching the signal current from the signal line when the control line is selected,	a receiving part for fetching the signal current from the signal line when the control line is selected,
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same,	a converting part for converting a current level of the fetched signal current to a voltage level and holding the same
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a drive part for converting the held voltage signal to a current signal and outputting the drive current,

5. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,193,591. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(a scanning line), a signal line to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched

signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the Patent No. 7,193,591:

10/784,828(claim 1)	7,193,591 (claim 1)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	A method of driving a light emitting element for driving a current-driven type light emitting element arranged at an intersecting portion of a data line supplying a signal current of a current level in accordance with brightness information and a scanning line supplying a selection pulse
a signal line to which a signal current having a current level in accordance with information is supplied,	a data line supplying a signal current of a current level in accordance with brightness information;
a receiving part for fetching the signal current from the signal line when the control line is selected,	a receiving routine for fetching the signal current from said data line in response to a selection pulse from said scanning line,
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same,	a converting routine for converting a current level of the fetched signal current to a voltage level and holding the same,
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a drive routine for passing a drive current having a current level in accordance with the held voltage level through the light emitting element

6. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 7,079,717. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(a scanning line), a signal line to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the Patent No. 7,079,717.

10/784,828(claim 1)	7,079,717(Claim 5)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	An active matrix type display device including current-writing type pixel circuits, the first scanning switch includes a first FET having a gate connected to a first scanning line;
a signal line to which a signal current having a current level in accordance with information is supplied,	current to pass through the pixel circuits via a data line in accord with luminance to write luminance information;
a receiving part for fetching the signal current from the signal line when the control line is selected,	a first scanning switch for selectively passing the current provided from the data line

A converting part for converting a current level of the fetched signal current to a voltage level and holding the same,	a conversion part for converting the current provided through the first scanning switch into voltage; a hold part for holding the voltage supplied thereto through the second scanning switch;
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a drive part for converting the voltage held in the hold part into current and passing the converted current through the electro-optical element,

7. Claims1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 7,015,882. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(a scanning line), a signal line to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the Patent No. 7,015,882.

10/784,828(claim 1)	7,015,882(Claim 1)

A current drive circuit for supplying a drive current to a driven object, including: a control line,	An active-matrix display device comprising: a display section including a matrix of pixel circuits to which image information is given in the form of current, a plurality of scanning lines for selecting each pixel circuit,
a signal line to which a signal current having a current level in accordance with information is supplied,	a plurality of data lines for supplying each pixel circuit with the image information; each pixel circuit comprises an electro optical element that changes the luminance level thereof in response to a current flowing there through,
a receiving part for fetching the signal current from the signal line when the control line is selected,	a driving circuit which holds the image information, and then writes the image information onto each pixel circuit by feeding the image information in the form of current to each of the plurality of data lines, driving circuit comprises a first switching element which connects and cuts a connection between a signal input line for receiving the image information
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same,	the driving circuit comprises a converting unit which converts the image information supplied in the form of current into a voltage, and which holds the voltage converted by the converting unit in the holding unit,
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a driving unit for supplying the image information in the form of current to each of the plurality of data lines after converting the voltage stored in the holding unit into the current

8. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 166 of copending Application No. 11/105,485. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(scanning line), a signal line(data line) to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the copending application No. 11/105,485.

10/784,828(claim 1)	11/ 105,485(claim 1)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	A display device comprising: a scanning line drive circuit for successively selecting scanning lines,
a signal line to which a signal current having a current level in accordance with information is supplied,	a data line drive circuit including a current source for generating a signal current having a current level in accordance with brightness information and successively supplying the same to data lines; a plurality of pixels arranged at intersecting portions of the

	scanning lines and the data lines and including current driven type light emitting elements emitting light by receiving the supply of the drive current
a receiving part for fetching the signal current from the signal line when the control line is selected,	a receiving part for fetching the signal current from a data line when the scanning line is selected
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same	a converting part for converting a current level of the fetched signal current to a voltage level and holding the same,
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	drive part for passing a drive current having a current level in accordance with the held voltage level through the light emitting element

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14, 16-21, 23-25, 37-49, 51-56 and 58-60 of copending Application No. 11/338,516. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(scanning line), a signal line(data line) to which a

signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and outputting the drive current. Comparing the present application with the copending application No. 11/338,516.

10/784,828(claim 1)	11/ 338,516(claims 1-4 and 11)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	a display section including a matrix of pixel circuits to which image information is given in the form of current, a plurality of scanning lines for selecting each pixel circuit
a signal line to which a signal current having a current level in accordance with information is supplied,	A plurality of data lines for supplying each pixel circuit with the image information;
a receiving part for fetching the signal current from the signal line when the control line is selected,	a driving circuit which holds the image information, and then writes the image information onto each pixel circuit by feeding the image information in the form of current to each of the plurality of data lines, driving circuit comprises a first switching element which connects and cuts a connection between a signal input line for receiving the image information;
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same	the driving circuit comprises a converting unit which converts the image information supplied in the form of current into a voltage, and which

	holds the voltage converted by the converting unit in the holding unit.
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	driving unit for supplying the image information in the form of current to each of the plurality of data lines after converting the voltage stored in the holding unit into the current.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claims 1-13, 18-31,33, 34, 38-41, 43-51, 53-54, 58, 61, 63-81, 88-119, 126-148 and 155-165 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 11/323,414. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim the same subject matter of a current drive circuit for supplying a drive current to a driven object including: a control line(scanning line), a signal line(data line) to which a signal current having a current level in accordance with information is supplied, a receiving part for fetching the signal current from the signal line when the control line is selected, a converting part for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part for converting the held voltage signal to a current signal and

outputting the drive current. Comparing the present application with the copending application No. 10/154,262:

10/784,828(claim 1)	11/323,414(claims 1 and 3)
A current drive circuit for supplying a drive current to a driven object, including: a control line,	An active matrix type display device including current-writing type pixel circuits arranged in a matrix form for allowing current to pass through said pixel circuits via a data line in accord with luminance to write luminance information
a signal line to which a signal current having a current level in accordance with information is supplied,	pixel circuits via a data line in accord with luminance to write luminance information
a receiving part for fetching the signal current from the signal line when the control line is selected,	A first scanning switch for selectively passing the current provided from said data line;
A converting part for converting a current level of the fetched signal current to a voltage level and holding the same	a conversion part for converting the current provided from the data line into voltage; a hold part for holding the voltage converted by said conversion part
a drive part for converting the held voltage signal to a current signal and outputting the drive current.	a drive part for converting the voltage held in said hold part into current and passing the converted current through said electro-optical element

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-2, 7, 9, 21, 23, 26-28, 33, 38, 40, 43, 46, 48, 53, 58, 63, 66-67, 75, 77, 89-89, 91, 97-98, 100, 104, 105, 113, 115, 127, 129, 132, 134-136, 138, 142, 143, 145, 147, 156, 158-159, and 161-165 are rejected under 35 U.S.C. 102(e) as being anticipated by Knapp et al(6,359,605).

As to claims 1-2, 7, 9, 21, 23, 26-28, 33, 38, 40, 43, 46, 48, 53, 58, 63, 66-67, 75, 77, 89-89, 91, 97-98, 100, 104,105, 113, 115, 127, 129, 132, 134-136, 138, 142, 143, 145, 147, 156, 158-159 and 161-165 , Knapp et al teach a current drive circuit for supplying a drive current to a driven object(20), including: a control line(12), a signal line(14) to which a signal current(a current driven EL display) having a current level in accordance with information is supplied, a receiving part(34) for fetching the signal current from the signal line(14) when the control line(12) is selected, a converting part(25, 32, 30) for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part(24) for converting the held voltage signal to

a current signal and outputting the drive current(see figures 1-3; column 5, lines 10-25and lines 58-68 and column 6, lines 1-24).

As to claims 23, 100 and 138, Knapp et al teach a current drive circuit for supplying a drive current to a driven object(20), including: at least one control line(12), a signal line(14) to which a signal current having a current level in accordance with information is supplied, a conversion use insulating gate type field effect transistor(25) with a source connected to a reference potential(VS2), a fetch use insulating gate type field effect transistor(34) connected between a drain of the conversion use insulating gate type field effect transistor(25) and the signal line(14) and having a gate connected to a the control line(12), a drive use insulating gate type field effect transistor(24) connected between the reference potential(VS2) and the driven object(20), a capacitor(30) having a first electrode connected to a gate of the conversion use insulating gate type field effect transistor(34) through a switch(32) and a gate of the drive use insulating gate type field effect transistor(24) and having a second electrode connected to the reference potential(VS2), and a switch use insulating gate type field effect transistor(32)connected between a gate of the conversion use insulating gate type field effect transistor(25) and a connecting point of a gate of the drive use insulating gate type field effect transistor(24) and a first electrode of the capacitor(30) and having a gate connected to said control line(12)(see figure 3 and column 6, lines 8-28).

As to claim 26, Knapp et al each a pixel comprising a display element formed at an intersecting portion of the data line(14) and the scanning line(12), the pixel

comprising a receiving part(34) for fetching the signal supplied to the data line(14) when the scanning line(12) converting and holding the fetched signal, and a drive part(24) for converting the held signal and supplying it to the display element(20)(see figures 1-2; column 5, lines 59-68 and column 6, lines 1-28).

As to claim 27, Knapp et al teach the fetched signal is a current(I1), the signal held at the converting and holding part is a voltage, and the signal supplied to the display element(20) is a current)(see figure 2; column 6, lines 43-68 and column 7, lines 1-17).

As to claims 2, 28, 67 and 105, Knapp et al teach a conversion use transistor(25) having a control terminal(gate), a first terminal(e.g. source) and a second terminal(drain), and a capacitor(30) connected to the control terminal(gate) through a transistor(32)(see figure 3).

As to claim 7, Knapp et al teach the display part the drive part includes a drive use transistor(24) provided with a control terminal(gate), a first terminal(source), and a second terminal(drain) and the drive use transistor(24) receives a voltage level held at the capacitor(30) at its control terminal(gate) and passes a drive current having a current level in accordance with the same(see figure 3).

As to claims 9, 77, 115 and 147, Knapp et al teach the drive use transistor(24) is formed in the vicinity of the conversion use transistor(25) and has a equal threshold voltage as the conversion use transistor(25)(see figure 5; column 6, lines 8-18 and lines 52-68 and column 7, lines 1-17).

As to claims 21, 98 and 136, Knapp et al teach a drive use insulating gate type field effect transistor(24) is a P-channel type(see figure 3; column 8, lines 62-68 and column 9, lines 1-8).

As to claims 33 and 54, Knapp et al teach a drive part comprises a third transistor(24) having a control terminal connected to the control terminal of the first transistor(24)(though a transistor(32)(see figure 3).

As to claims 38 and 58, Knapp et al teach drive part(24) and the converting and holding part(25, 32, 33) are configured by a plurality of transistors(see figure 3).

As to claim 40, Knapp et al teach the display element(20) is connected to the first terminal of the third transistor(24) and a constant voltage source(a predetermine referenced potential) is connected to the second terminal of the third transistor(24)(see figure 3 and column 6, lines 8-52).

As to claims 43 and 63, Knapp et al teach the display element(20) has at least one transparent electrode and has a layer including an organic substance sandwiched between the electrodes(see figures 2-3 and column 5, lines 26-42).

As to claim 48, Knapp et al teach the converting and holding part(25, 32, 30) comprises a first transistor(25) provided with a control terminal and one end of a capacitor(30) connected to control terminal through a switch(32)(see figure 3).

As to claim 53, Knapp et al teach the drive part comprises a third transistor(24) having a control terminal connected to the control terminal of the first transistor(25) through a switch(32)(see figures 2-3).

As to claims 75, 113 and 145, Knapp et al teach the drive part(24) includes a drive use insulating gate type field effect transistor provided with a gate, a drain, a source, and a channel, and the drive use insulating gate type field effect transistor receives the voltage level held at the capacitor(30)at its gate and passes a drive current having a current level in accordance with that through the light emitting element via the channel(see figure 3).

As to claim 89, Knapp et al teach the drive part(24) includes an insulating gate type field effect transistor provided with a gate, drain, and a source and passes the drive current passing between the drain and the source to the light emitting element(20) in accordance with the level of the voltage applied to the gate, and the light emitting element is a two terminal type having an anode and a cathode, where the cathode is connected to the drain.

As to claims 91, 129, 132, 134, 158, 159 and 161, Knapp et al teach a display device including an adjusting means(VS2) for downwardly adjusting the voltage level held by the converting part(25, 32, 30) and supplying the same to the drive part(24) to tighten the black level of the brightness of each pixel(see figure 3 and column 7, lines 31-45).

As to claims 97, 135 and162, Knapp et al teach the light emitting element(20) comprises an organic electroluminescence element(see figures 2-3 and abstract).

As to claim 127, 156, Knapp et al teach the drive part includes an insulating gate type field effect transistor(24) provided with a gate, drain, and a source and passes the drive current passing between the drain and the source to the light emitting element in

accordance with the level of the voltage applied to the gate, and the light emitting element is a two terminal type having an anode and a cathode, where the cathode is connected to the drain(see figure 3 and column 7, lines 30-45).

As to claim 143, Knapp et al teach the converting routine((25, 32, 30) includes a routine using a conversion use insulating gate type field effect transistor(125) provided with a gate, a source, a drain, and a channel and a capacitor(30) connected to the gate through a switch(32), in the routine, the conversion use insulating gate type field effect transistor(25) creates the voltage level converted by passing the fetched signal current though the channel in the receiving routine at the gate, and the capacitor (30) holds voltage level created at the gate(see figure 3).

As to claims 163-165, Knapp et al teach a display device including: scanning lines(12) for selecting pixels(20) and data lines(14) giving brightness information for driving the pixels arranged in a matrix, each pixel including a light emitting element changing in brightness by an amount of current supplied, a writing means controlled by a scanning line(12) and writing the pixel brightness information given from the data line(14), and a drive means(24) for controlling the amount of current supplied to the light emitting element(20) in accordance with the written brightness information, the brightness information being written in each pixel by applying an electric signal in accordance with the brightness information to the data line(14) in the state with the scanning line(12) selected, the brightness information written in each pixel being held in each pixel even after the scanning line(12) is not selected and the light emitting element of each pixel able to remain lighted by a brightness in accordance with the

held brightness information, further comprising an adjusting means(VS2) for downwardly adjusting the brightness information written by said writing means an supplying the same to said drive means to tighten the blackness level of each pixel(see figures 3-4; column 5, lines 59-68; column 6, lines 1-24 and lines 43-68; column 7 and column 8, lines 1-27).

13. Claims 1-2, 7, 26-28, 66, 67, 90, 104, 105, 128, 142-143 and 157 are rejected under 35 U.S.C. 102(e) as being anticipated by Sano(6,246,384).

As to claims 1-2, 7, 26-28, 66, 67, 90, 104, 105, 128, 142-143 and 157, Sano teaches a display device comprising a scanning line drive circuit for successively selecting scanning lines(G), a data line drive circuit including a current source for generating a signal current having a current level in accordance with brightness information and successively supplying the same to data lines(D), and a plurality of pixels(40) arranged at intersecting portions of the scanning lines(G) and the data lines(D) and including current driven type light emitting elements emitting light by receiving the supply of the drive current, wherein each pixel (40) comprises a receiving part for fetching the signal current from a data line(D) when the scanning line(G) is selected, a converting part(30, 20, 52, 51-1) for converting a current level of the fetched signal current to a voltage level and holding the same, and a drive part(59) for passing a drive current having a current level in accordance with the held voltage level through the light emitting element(40)(see figure 2; abstract; column 4, lines 1-6, column 4, lines 66-68; column 5, lines 1-26 and column 6, lines 14-52).

At o claims 1, 26, 104 and 142, Sano teaches a receiving part(12, 13) for fetching the signal current from the data line(D) in response to a selection pulse from the scanning line(G)(see figure 2).

As to claims 2, 28, 67, 105 and 143, Sano teaches a current circuit comprising the converting part(30, 20, 52, 51-1) includes a conversion use transistor(20) provided with a control terminal, a first terminal, and a second terminal and a capacitor(30) connected to the control terminal(see figure 2).

As to claims 90, 128 and 157, Sano teaches the drive part(30, 23, 42, 51-1) includes an insulating gate type field effect transistor(20) provided with a gate, a drain, and a source and passes a drive current passing between the drain and the source to the light emitting element(40) in accordance with the level of the voltage applied to the gate(20), and the light emitting element(40) is a two terminal type having an anode and a cathode, where the anode is connected to the source(59)(see figure 2 and column 5, lines 10-23).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 10, 25, 78, 102, 116, 126 and 140 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Van Zalinge(5,966,110).

As to claims10, 25, 78, 102, 116, 126 and 140, Knapp et al teach a current drive having the conversion use transistor(25) and the drive use transistor(24)(see figure 3). Knapp et al fail to disclose the size of the conversion use transistor is set larger than the size of the drive use transistor.

Van Zalinge teaches the size of one of current mirror transistor(MP2) could be different(the size ratio of the MP1 and MP2 could be changed which means the current transistor(MP2)) could be large than the current transistor(MP1) from the size of the other current mirror transistor(MP 1)(see figures 1A, 1B and column 1, lines 41-55). It would have been obvious to have modified Knapp et al with the teaching of Van Zalinge, so as to adjust the current of a pixel element(see Van Zalinge' column 1, lines 48-55 and Knapp et al's column 6, lines 43-60).

16. Claims 13, 81 and 119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Van Zalinge(5,966,110) and Bird et al(5,852,425).

As to claims 13, 81 and 119, Knapp et al fail to disclose a drive use transistor(17) operates in the linear region.

Bird et al teach the drive use transistor could operate in the linear region(see figures 1-2, 5a, 5b; column 2, lines 16-27, and column 7, lines 18-26). It would have been obvious to have modified Knapp et al as modified with the teaching of Bird et al, so a transistor could be operated as a simple switch in a linear region(see column 2, lines 16-27).

17. Claims 11-12, 79-80, 117, 118 and 148 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Bird et al(5,852,425).

As to claims 11-12, 79-80, 117, 118 and 148, Knapp et al fail to disclose a drive use transistor operates in the saturated region and passes a drive current corresponding to the difference between the voltage level applied to the gate and the threshold.

Bird et al teach a drive use transistor(17) operates in the saturated region and passes a drive current corresponding to the difference between the voltage level applied to the gate and the threshold voltage($Ids=1/2\mu Co(Vgs-Vt)^2$(see figures 1-2, 5a, 5b; column 6, lines 56-68 and column 7, lines 1-26). It would have been obvious to have modified Knapp et al with the teaching of Bird et al, so as to simply the calculation for current flow into a transistor.

As to claim 12, 80 and 118, Knapp et al as modified teach the drive use transistor could operate in the linear region(see figures 1-2, 5a, 5b; column 2, lines 16-27, and column 7, lines 18-26).

18. Claims 18, 88 and 155 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Sano(6,246,384).

Knapp et al fail to disclose a double-gate transistor.

Sano teaches a current drive circuit comprising a double a double-gate transistor(10)(see figure 2). It would have been obvious to have modified Knapp et al with the teaching of Sano, so as to reduce the off-current to pass therethrough.

19. Claims 19-20, 44-45, 64-65, 92-94, 96 and 130-131 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Ishizuka et al(5,923,309).

As to claims 19-20, 44-45, 64-65, 92-94, 96 and 130-131, Knapp et al fail to disclose a leak element is connected between the data line and a predetermined potential or setting data to an initial value.

Ishizuka et al teach a device comprising a to disclose a leak element(Swa1, Swa2) is connected between the data line(X1-X2) and a predetermined voltage(ground)(see figure 8 and column 5, lines 33-35). It would have been obvious to have modified Knapp et al with the teaching of Ishizuka et al, so as to have a high speed driving display system by setting initial data voltage to a ground level.

As to claims 94 and 96, Knapp et al teach a display device having the drive part(24) includes an insulating gate type field effect transistor having a gate, a drain, and a source, and the adjusting means(VS2) downwardly adjusts the level of the voltage applied to the gate by raising the bottom of the voltage between the gate and the source of the insulating gate type field effect transistor(see figure 3 and column 7, lines 30-45).

20. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Stewart et al(5,952,789).

Knapp et al fail to covert a voltage into a current supplied to a data line.

Stewart et al teach a display device for covert a voltage into a current supplied to a data line(see figures 4-5, 8-9; column 7, lines 51-68; column 8,lines 1-48). It would

have been obvious to have modified Knapp et al with the teaching of Stewart et al, since the gray scale information could be easy to represent by voltages.

21. Claim 111 is rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al in view of Imai(6,369,785).

Knapp et al fail to disclose a transistor is connected for providing independently for each of the three primary colors.

Imai teaches a pixel circuit comprising a transistor(226) connected for providing independently for each of the three primary colors(see figures 5A-5B and column 5, lines 21-40). It would have been obvious to have modified Knapp et al with the teaching of Imai, so as to provide a color display to a user.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tanaka e tal(6,489,952) teaches an EL display having a double transistor(12, 13).

Komiya et al(6,501,448) teaches teaches an EL display having a double transistor(31, 41).

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi Lao whose telephone number is 571-272-7671. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 10, 2007

Lun-yi Lao
Primary Examiner

June 10, 2007

Lun-yi Lao
Primary Examiner